
Stem cells for a broken heart? Maybe one day

Posted: February 7, 2011

Created: 07/02/2011 - 12:44

The LA Times has a timely story in the week leading up to Valentine's day summarizing the role of stem cells in mending a broken heart. There's been a lot of talk - and a lot of money invested -- over the past few years pushing bone marrow stem cells as a tool for repairing damage after heart attack.

I remember back in 2004 I wrote about Stanford's Robert Robbins who had transplanted bone marrow stem cells into the hearts of mice with induced heart attacks. He found a temporary improvement in those mice, but that improvement didn't last. In the end, their hearts were just as broken as their untreated lab-mates and the mice died at the same rate.

Years later, his result seems to have held up in people. From the LA Times:

“ From 2002 to 2006 alone, there were at least 18 randomized controlled studies involving nearly 1,000 patients.

"Everyone started putting bone marrow in the heart," says Christine Mummery, a researcher at Leiden University Medical Center in the Netherlands, who has studied how to turn stem cells into heart muscle cells called cardiomyocytes.

But the results, she says, were a mixed bag. The treatment appeared to be safe, but patients had only transient improvement.

"People went from being very sick to a little less sick," Mummery says.

These doubts about bone marrow stem cells for repairing heart damage haven't discouraged CIRM grantees working with other stem cell types. CIRM grantee Eduardo Marban, who is director of the Cedars-Sinai Heart Institute in Los Angeles, has CIRM funding to use the heart's own stem cells as a repair mechanism after heart attack. He is quoted in the LA Times story as saying:

“ The hope is that the cardiac stem cells will take root and reverse the scar. Results should be out later this year. "Let's just say we're extremely encouraged," Marb  n says. "It looks like it's working, and cleanly."

Over at the Gladstone Institute of Cardiovascular Disease in San Francisco, CIRM grantee Deepak Srivastava has devised a way of directly converting heart connective tissue into heart muscle, at least in rodents. That work is still years from clinical trials - or even being proven to work in human cells - but has caused a stir in stem cell circles.

Still other CIRM grantees throughout the state are prodding human embryonic stem cells to mature into heart tissue that could be transplanted into the heart as a sort of cellular patch for the damaged region.

None of these approaches will arrive in time to repair a broken heart on this Valentine's day, but one day down the road stem cells of some type - whether it's heart stem cells, directly reprogrammed cells or embryonic stem cell derived - might be what patches up damaged hearts of the future.

Here's a complete list of CIRM funding for heart disease.

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Tags: Marban, Srivastata, Heart Disease, Gladstone Institute, Cedars-Sinai